

Application No. 10/555,713  
Third Preliminary Amendment Dated 3/2/2009  
Reply to Notice of Non-Compliant Amendment dated 1/28/09

This listing of claims will replace all prior versions, and listings, of claims in the application:

**In the Claims:**

1-17. Canceled.

18. (PREVIOUSLY PRESENTED) A radiation sensor comprising:  
a support;  
a cavity which may be a recess or a through hole formed in one surface of the support;  
a sensor element formed above the cavity, preferably on a membrane covering the cavity; and  
electric terminals for the sensor element, characterised in that:  
the cavity in the surface of the support has a round or oval contour;  
the side wall of the cavity is rectangular to the support surface; and  
the cavity is formed through dry etching.

19. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 18, characterised in that the support has a rectangular and particularly a square contour.

20. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 19, characterised in that one or more electric terminals are provided in a corner section of the sensor.

21. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 18, characterised in that the sensor element is a thermopile.

22. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 18, characterised in that a plurality of sensor elements are formed above one cavity.

23. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 18, characterised by one or more of the following features:

the membrane material comprises a dielectric, particularly silica and/or silicon nitride;

under the membrane an etching stop layer containing an oxide, particularly silica, is provided; and

the support material contains silicon and/or GaAs and/or a semiconductor material.

24. (PREVIOUSLY PRESENTED) A radiation sensor according to claim 18,

characterised by one or more of the following dimensions:

support height H: more than 50  $\mu\text{m}$ , preferably more than 200  $\mu\text{m}$ , less than 1,500  $\mu\text{m}$ , preferably less than 600  $\mu\text{m}$ ;

support edge length L: less than 2 mm, preferably less than 1.5 mm;

cavity diameter D: more than 55%, preferably more than 65% and/or less than 90%, preferably less than 80% of the support edge length; and

membrane thickness D: less than 3  $\mu\text{m}$ , preferably more than 0.1  $\mu\text{m}$ .

25. (PREVIOUSLY PRESENTED) A wafer comprising a plurality of blanks for

radiation sensors according to one or more of the preceding claims formed on it,

characterised in that the blanks are arranged on the wafer in a rectangular, rhombic, triangular or hexagonal grid.

26. (PREVIOUSLY PRESENTED) A sensor array comprising a plurality of

radiation sensors according to one or more of claims 18 to 24.

27. (PREVIOUSLY PRESENTED) A sensor array according to claim 26,

characterised in that a plurality of radiation sensors are arranged in two or more rows and in two or more columns.

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28. (PREVIOUSLY PRESENTED) A sensor module comprising:
- a radiation sensor according to one or more of claims 18 to 24;
  - a housing in which the radiation sensor is accommodated;
  - an optical window in the housing; and
  - electric terminals protruding from the housing, said electric terminals being connected to the terminals.
29. (PREVIOUSLY PRESENTED) A sensor module according to claim 28, characterised by an optical projection element, particularly a lens or a mirror.

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30. (PREVIOUSLY PRESENTED) A method for manufacturing a radiation sensor comprising the steps:

production of a plane wafer;

application of an etching stop layer on a first surface of the wafer and formation of a mechanically stable membrane on top of it;

application of an etching mask having one or more openings with oval or round contours on the second surface of the wafer; and

dry etching of cavities in the wafer from the second surface in the direction towards the etching stop layer such that the side wall of the cavity is rectangular to the support surface.

31. (PREVIOUSLY PRESENTED) A sensor module comprising:

a sensor array according to claim 26;

a housing in which the sensor array is accommodated;

an optical window in the housing; and

electric terminals protruding from the housing, said electric terminals being connected to the terminals.

32. (PREVIOUSLY PRESENTED) A sensor module according to claim 31, characterised by an optical projection element, particularly a lens or a mirror.